

Environmental Exposures and Your Health

We hear about dangers in our environment so often that it's sometimes difficult to know if they are real or exaggerated. Experts don't always agree, and even when they do, we can't always be sure what that means to ourselves and our families. Certainly there are some environmental hazards which are known to cause illness. But which of these hazards can affect us personally?

This pamphlet is the first in a series about exposures to hazardous substances in the environment. It explains how public health scientists try to connect environmental exposures to illness. It lists some sources of environmental hazards, and suggests ways you can either reduce your exposure to them, or reduce the likelihood of adverse health effects for those you can't avoid. It also contains information on some of the illnesses and other health effects known to be caused by some of the more common environmental hazards.

Other pamphlets in this series provide information on reproductive disorders and cancers associated with environmental exposures.

If you have more questions after reading this, ask your doctor, or contact:

New Jersey Department of Health and Senior Services
Consumer and Environmental Health Services
Hazardous Waste Site Project/Community Services
P.O. Box 369
Trenton, NJ 08625-0360

or call (609) 588-3120.

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How do scientists know if an environmental contaminant is hazardous to human health?

There are several ways for scientists and public health professionals to determine that a chemical or contaminant is hazardous to human health. One way is through animal studies. Animals are exposed to varying amounts of a chemical for different lengths of times. Then they are examined for health effects. Sometimes the offspring of the test animals are also examined to determine if the chemical affects reproduction.

Another way to measure a hazard's effects on humans is through **epidemiologic studies**. These studies look at large numbers of people and try to determine whether those exposed to a contaminant or hazard are more likely to contract a particular disease than those who are not. These studies also look for unusual numbers of disease cases and try to find a common cause.

Sometimes epidemiologic studies look at workers exposed to large quantities of chemicals to see if they cause specific health effects. For example, worker exposures to the pesticide dibromochloropropane were studied and the pesticide was determined to cause male sterility.

Epidemiologic studies are not always able to estimate the hazards of exposure. A process known as **health assessment** is used to determine the need for, or feasibility of, epidemiologic studies around hazardous waste sites.

Why is it difficult to link exposure to illness?

- *We often don't know what is out there*

We don't always know what contaminants are in the air, soil, or water, or how much was there in the past. For example, if there is an incinerator in your neighborhood, air testing may tell you what is being released. But if there once was a factory in your neighborhood that could have contaminated the area, you may not know it.

- *The presence of a hazard does not always mean exposure*

Just knowing that a particular hazard or contaminant is present does not mean that you are exposed to it. Some substances are hazardous only when they come in direct contact with our bodies. Some are hazardous only when they come in contact with our skin; others only when we swallow or inhale them. Asbestos, for example, is hazardous only when inhaled. That's why asbestos siding on your house which is intact is not nearly as likely to be a health concern as loose or damaged asbestos pipe wrap in your basement. Under normal conditions, intact asbestos siding doesn't release the very small fibers that can be inhaled.

- ***Illnesses may appear long after exposure***

It's not always obvious that an illness is related to a particular exposure unless there is a quick reaction to a known contaminant or hazardous substance. Exposures to some pesticides can cause immediate reactions; for other chemicals, effects don't occur for hours, days, or even years.

- ***Not everyone who is exposed becomes ill, or shows the same symptoms***

Not everyone who is exposed to the same hazardous substance will become ill, or show the same symptoms. For example, some people may be allergic to the substance, or they may have another underlying illness or condition which makes them more susceptible to the hazard. People with asthma are more likely to be affected by ozone, or smog. Others may be in a sensitive age group. Children's developing nervous systems are much more sensitive to lead than those of adults. Individuals may be exposed to other substances that increase their chances of becoming ill. Exposure to both tobacco smoke and radon constitutes a much higher cancer risk than exposure to smoke or radon alone. A person's genetic make-up can also increase susceptibility.

- ***Symptoms from exposures are often vague and non-specific***

Many common symptoms aren't very specific. Headache, fatigue, dizziness and nausea can have numerous other causes, including infectious diseases or chronic conditions. Sometimes this makes it difficult to know whether an illness was caused by an environmental exposure.

- ***There is not very much information about health effects from exposures to low levels of contaminants, or mixtures of contaminants***

Much of what we know about the health effects of exposure to environmental hazards comes from either high-level human exposure -- frequently from a single chemical in the workplace -- or from animal studies. Workplace levels are usually higher than those found in the environment. Sometimes there is a **threshold** level: an amount of a hazard to which a person can be exposed, or take into the body, without damage. Some hazards have no threshold level, and any amount can cause damage. While animal studies are useful in studying exposure to low levels of hazards, animals don't always show the same effects as humans. Also, the route of exposure (that is, whether the hazard is taken into the body by eating, breathing, or skin contact) used for an animal study is not always the same as a person's route of exposure under normal conditions. Epidemiologic studies tell us a lot about how a group of people might be expected to react, but do not necessarily give us information about what might happen to a specific individual.

Most people, in their normal day-to-day activities, are exposed to a variety of low-level hazards. These hazards may or may not cause adverse health effects. Some hazards in combination are much more harmful than they are individually. Not much is known,

however, about the effects of these combinations.

What kinds of environmental hazards might I be exposed to?

Your environment is where you live, work, play, or visit. There can be hazardous substances in all of them. The examples given below are some of the more common hazards.

In your home

- * some cleaning products
- * some pest control products
- * tobacco smoke
- * carbon monoxide, nitric oxide, nitrogen or sulfur dioxide, or particles from the incomplete burning of fuel from your:
 - gas, kerosene or propane stove or heater;
 - fireplace; or
 - woodburning stove.
- * asbestos, which may be found in some pipe insulation made between 1920 and the mid 1970's; door gaskets on furnaces and wood or coal burning stoves manufactured between 1940 and the early 1980's; wall and ceiling materials dating from 1930 to 1950; vinyl flooring, and roofs, shingles, and siding
- * drinking water, which may contain lead from plumbing; chemicals, such as chloroform, which form when water is disinfected; and chemicals such as solvents or petroleum products from waste sites or leaking underground storage tanks
- * radon, a naturally occurring radioactive gas formed when the radioactive elements radium and uranium decay, or break down. Radium and uranium are found in many rocks and in soil, so radon is constantly being generated.
- * some activities such as remodeling, including use of fresh paint and varnish; removal of old paint or plaster; and soldering. All of these can expose you and your family members to lead-based paint, lead dust, or lead fumes.
- * some hobbies and crafts, such as jewelry making, artwork, photographic processing, ceramic making and silk screening.

● ***In your workplace***

* workplace hazards are specific to your job function and those of people who work near you. Your employer should give you information on any worksite hazardous substance.

- ***Outdoors***

* air, including smog, vehicle exhaust, and some local industries' emissions

* soil, from pesticide use or hazardous waste dumping; from lead, particularly next to houses which had or have lead paint on the house or trim, or along roadways and driveways

* hazardous waste sites, in which hazardous chemicals may contaminate underground water supplies, or be carried into the surrounding areas by wind, erosion, or drainage. In the past, waste products from some industries were used as fill in local construction activities.

* recreational water, which may have been contaminated by sewage or past industrial practices.

How can I prevent or reduce exposure to environmental hazards?

It is always best to avoid exposure to hazardous substances wherever possible. To do so, you can:

- find out as much as you can about what substances to which you might be exposed.
- read product labels.
- substitute less toxic or non-toxic products where possible. If there are no substitutes, follow ALL SAFETY PRECAUTIONS on the label, including disposal. When in doubt, the manufacturer can give you more information.
- contact your County Extension Agent for less toxic lawn and garden care or pest control advice.
- Community Right-To-Know laws give you access to information about what hazardous materials the industries in your community use or produce. Worker Right-To-Know laws can help you with this information on your worksite.
- Most people do not live or work near hazardous waste sites. Those who do may have higher exposures to chemicals. If you live near a hazardous waste site, you may need to take additional precautions to avoid exposure. For example, it may be obvious to adults, but not to children and teenagers, to stay off the site. Not all hazardous waste sites are

fenced and secured, and there are not always warning signs posted. If a site has caused contamination of local wells and you have a well which has not been sealed, check with your local health officer before using the water for any purpose, including watering your lawn or washing your car. If there are advisories or restrictions regarding fishing or swimming in local lakes, rivers or streams, make certain that all family members understand and follow these advisories. If you are uncertain about the contaminants and whether or not they pose a hazard to you, there are telephone numbers on the back of this brochure which can help you find the information you need. If you already know that you live near a site and that the site has caused contamination to your property or water supply, you can make a more informed decision about avoiding exposure.

- If your house plumbing has lead pipes or lead solder, you should allow the water to run for about a minute before use if it hasn't been run for a few hours. Hot water should not be used for drinking, especially by children (for example, in preparing infant formula or juices).
- Sometimes you can't avoid exposures. And testing for every contaminant that could be in or around your home is very expensive. However, there are some more common pollutants, such as radon, for which there are inexpensive tests. If you have small children and your house was built before 1978, you might want to consider testing for lead paint. And it's a good idea to have your fuel supplier check for combustion by-products at the beginning of the heating season. Municipal water supplies are tested regularly for many potential contaminants, and results can be obtained from your water supplier. If you have a private well, check with your local health officer to find out if there are specific contaminants in your area for which your water should be tested.
- To decrease your chances of becoming ill from environmental exposures, it is important to be in the best possible health. Diet is very important in protecting your health; for example, less lead is taken into your body when your diet is rich in iron and calcium. Your health care provider can give you advice and information about this.

Where can I get more information?

Hazardous waste sites:

For information on the contaminants and possible exposures from hazardous waste sites, contact your local health officer. You will find him or her in the Blue Pages of your telephone directory

or

New Jersey Department of Health and Senior Services, Consumer and Environmental Health Services, Hazardous Site Health Evaluation Program
(609) 588-3120.

Agency for Toxic Substances and Disease Registry, Regional Office
(212) 637-4305.

New Jersey Department of Environmental Protection, Site Remediation, Bureau of Community Relations at (609) 984-3081.

Pesticides:

For health-related information on pesticides, contact the National Pesticide Information Center, (800) 858-7378.

For least toxic pest control methods consult your County Cooperative Extension Services

To report a misapplication, contact the New Jersey Department of Environmental Protection, Pesticide Control Program at (609) 984-6568 or 1-877-WARNDEP.

Poisonings:

To report or obtain information on actual or suspected poisonings, contact the New Jersey Poison Information and Education System at 1-800-222-1222

Drinking Water:

New Jersey Department of Health and Senior Services
Consumer and Environmental Health Services
Drinking Water Project
(609) 588-3120.

New Jersey Department of Environmental Protection, Bureau of Safe Drinking Water
(609) 292-5550.

Outdoor Air Quality:

New Jersey Department of Environmental Protection, (800) 782-0160.

Lead:

National Lead Clearinghouse, (800) LEAD-FYI.

New Jersey Department of Health and Senior Services
Lead Poisoning Program, (609) 292-5666.

New Jersey Department of Health and Senior Services
Consumer and Environmental Health Services
(609) 588-3120

Asbestos:

New Jersey Department of Health and Senior Services
Consumer and Environmental Health Services
(609) 588-3120

Worker Right-To-Know:

New Jersey Department of Health and Senior Services
Occupational Health
(609) 984-2202.

Community Right-To-Know:

New Jersey Department of Environmental Protection, Right-To-Know Program,
(609) 292-6714.

Toxic Release Inventory:

For information on releases and transfers of toxic chemicals from manufacturing facilities,
contact the United States Environmental Protection Agency, Emergency Planning and
Right-To-Know Hotline, (800) 535-0202.